

Amendment dated January 22, 2008
Serial No. 10/880,867

REMARKS

Reconsideration of the rejections set forth in the Office Action is respectfully requested. By this Amendment, claims 1-23 have been amended. Currently, claims 1-21 are pending in this application.

Recommended line numbering of claims

The Examiner requested that applicants provide line numbering of each line of every claim because, according to the Examiner, that is the preferred format. Applicants went through and tried to implement line numbering, but were unable to make the word processing program implement line numbering as suggested by the Examiner. Thus, applicants apologize for not being able to comply with this request. Applicant's representative will continue to work on this technical detail to try to learn how to use the features of the current word processing program to implement this in connection with future PTO correspondence.

Rejection under 35 USC 101

The Examiner rejected claims 1-23 under 35 USC 101 as directed to non-statutory subject matter. Applicants have amended claims 1-23 to overcome this rejection.

Rejection under 35 USC 112, second paragraph

The Examiner rejected claims 1-23 under 35 USC 112, second paragraph. Specifically, the Examiner indicated that it was not clearly understood how the data related to the scheduled resources. As described in somewhat greater detail below, this application relates to a method and apparatus for scheduling resources of a switched underlay network. The resources, for example, may be wavelengths of light that travel through optical fibers on the network. The method provides a way to schedule these resources to be used for particular transfers of data. The data is thus not being claimed, but rather is the information that is flowing through the network over the scheduled resources. Hopefully the amendments to the claims have clarified the interrelationship between the data and the scheduled resources. If not, applicants will be happy to work with the Examiner to clarify the language so that the claims are sufficiently definite.

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In connection with Claim 22, the Examiner indicated that it was unclear what standard was being used to perform network topology discovery, route creation, and path allocation. Applicants are not claiming any particular standard as the standards involved in performance of these functions on a network may change over time. Thus, applicants have not amended this claim to specify any particular standard.

The Examiner also indicated that it was not clear how the steps of performing network topology discovery, route creation, and path allocation related to the steps of scheduling unconstrained requests. Applicants have amended claim 22 to address this issue and respectfully request that the rejection be withdrawn. As noted above, however, although applicants have made particular amendments to the claims to comply with the request that the claims be clarified, applicants are willing to work with the Examiner to arrive at suitable claim language should the Examiner be of the opinion that additional claim amendments are necessary to comply with the requirements of 35 USC 112, second paragraph.

Rejection under 35 USC 102 and under 35 USC 103

Claims 1-23 were rejected under 35 USC 103 as unpatentable over Ruttenberg (U.S. Patent No. 7,065,586) in view of Kikinis (U.S. Patent No. 5,515,510). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

This application relates to a method and apparatus for scheduling resources on a switched underlay network. (see Specification at paragraph 2). As described in the background of the invention section, e.g. at Paragraphs 6-7, as data volumes increase it becomes difficult to transfer data over a conventional packet network such as a TCP/IP based communication network. Accordingly, a switched optical network may be used to transfer files of this nature. In a switched optical network, a dedicated switched optical link will be allocated for a particular data transfer. (Specification at paragraph 6). Applicants proposed a method and apparatus to schedule these types of resources to be used for particular transfers of data on the network. Thus, when a data transfer is required to occur, a resource reservation request may be created and used to reserve resources of the switched underlay network.

Independent claim 1 recites a method of scheduling resources. Previously, claim 1 recited scheduling resources on the network. Applicants have amended claim 1 to change "on"

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to "of" so that it is clear that the resources of the network are being scheduled. Neither reference cited by the Examiner teaches or suggests scheduling resources of a switched underlay network.

Kikinis teaches a system that will interconnect clients and resources. Specifically, clients 27 are connected via a LAN 23A, 23B to client nodes 15, 18. The client nodes are connected in rings to form an array (rows R1-R4 and columns C1-C4) (See Kikinis at Col. 3, lines 5-15). Similarly, resources 28 (e.g. disk drives) are connected to a resource matrix having rings that form an array including columns C1-C4 and R1-R4. When a request for a resource arrives from a client, it may be routed first across a link 19 from the client node to the resource node, and then across the resource array. Alternatively, in times of high use, the request may be routed first across the client array and then to the resource array. (Kikinis at Col. 3, line 54 to Col. 4, line 8). Kikinis does not teach or suggest anything related to switched underlay networks.

Ruttenberg, similarly, is unrelated to switched underlay networks. Ruttenberg teaches sending devices (senders 220), receiving devices (receivers 210) and intermediary devices (230). An example of a receiver 210 is a computing device, such as a general purpose computer, a set-top box, or an Internet appliance. (Ruttenberg at col. 3, lines 14-16). The sender 220, in Ruttenberg, may be implemented as a web server or other networking device. (Ruttenberg at col. 3, lines 15-18). The Intermediary 230, in Ruttenberg, is a server that includes local storage to temporarily store data. (Ruttenberg at Col. 3, lines 18-20).

Ruttenberg teaches that each of these devices, the sender, receiver, and intermediary, should all include a transfer module 240. The transfer modules receive requests for transfer of data from a transmitter to a receiver, and determine if the requests may be satisfied by the transmitter and receiver. (Ruttenberg at Col. 3, lines 39-50). Where a transfer request cannot be met it will be denied.

However, the transfer modules in Ruttenberg only look at whether the end devices, i.e. the transmitter and receiver have enough bandwidth available given their other scheduled requests to handle the new request. (See e.g. Ruttenberg at col. 5, lines 3-15, Col. 5, lines 36-48). Ruttenberg does not address whether the underlying network will have sufficient capacity to handle the request. Indeed, the only place applicants could find where Ruttenberg addresses the underlying network is at Col. 3, lines 26-29, where Ruttenberg states that the network is a LAN, WAN, wireless network, or the Internet. Thus, it appears that Ruttenberg assumes sufficient connectivity between the transmitter and receiver, or between transmitter and

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intermediary, and then between intermediary and receiver. Ruttenberg instead focuses on whether the end systems have the capability to transmit and receive the data associated with the request.

Applicants have amended the claims to further clarify these distinctions between the cited combination of Ruttenberg and Kikinis. Specifically, applicants have amended the preamble of claim 1 to recite that the method is performing the steps of scheduling resources of a switched underlay network. This clarifies that the scheduling that is taking place is of the network resources themselves. Since this change was made to the preamble, applicants have also made conforming amendments to the steps of the recited method to clarify that the request is for scheduled resources of the switched underlay network. Additionally, for clarity, applicants have amended claim 1 to recite that the method includes the steps of scheduling the request to occur on particular scheduled resources of the switched underlay network, and coordinating with a data source to transmit data over the scheduled resources at the scheduled time. In view of these amendments to the claims, applicants respectfully request the Examiner to withdraw the rejection of claims 1-21.

With respect to independent claim 22, applicants have amended claim 22 to recite a computer implemented data transfer scheduling service that includes a data management service and a network resource manager, and that at least one of the data management service and the network resource manager schedules underconstrained network resources requests for network resources of the switched underlay network. Since both Ruttenberg and Kikinis fail to teach systems that schedule resources of a network, applicants respectfully request that the rejection of claims 22-23 be withdrawn.

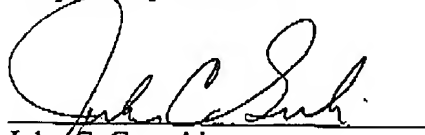
Conclusion

Applicant respectfully submits that the claims pending in this application are in condition for allowance and respectfully request an action to that effect. If the Examiner believes a telephone interview would further prosecution of this application, the Examiner is respectfully requested to contact the undersigned at the number indicated below.

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If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 502246 (Ref: NN-16442).

Respectfully Submitted



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